

RUMBOLD (T.F.)

*With the Compliments of*

THOS. F. RUMBOLD.

**NOSE, THROAT AND EAR;**

Instruments and Remarks.



Box  
A  
Description of New Instruments

FOR MAKING

EXAMINATIONS AND APPLICATIONS

TO THE

CAVITIES OF THE NOSE, THROAT AND EAR,

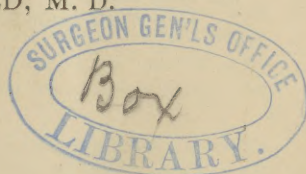
AND

Some Remarks about the Local and General  
Treatment of the Affections in which  
they are Applicable.

ILLUSTRATED BY THIRTEEN ENGRAVINGS.

THIRD EDITION—REVISED.

By THOMAS F. RUMBOLD, M. D.



ST. LOUIS:

A. M. LESLIE & CO.,

Manufacturers of Surgical and Dental Instruments,

819 North Fifth Street.

"In the early stage of any department of knowledge, it is almost a matter of necessity that it should be in the hands of a few. But it is the highest privilege of those who devote themselves to the reclaiming of new spots of territory, to be able after awhile to hand them over to the Commonwealth, to prove that they are now cultivated and well worthy of annexation."—*Jonathan Hutchinson.*

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This monograph comprises papers which originally appeared in various Medical Journals at different times, and some which appeared in a separate pamphlet form, and a few which now are published for the first time. The first of these, in connection with the last, are again presented in this form to the profession after a careful revision, with the hope that they may have the effect of exciting a greater interest in the importance of a rational local treatment of chronic catarrhal inflammation of the mucous membranes of the air passages.

From many who have seen and read these papers heretofore published, I have had encouraging expressions and evidences of approbation, which have aided me much in the preparation of this monograph. To such I tender my sincere thanks, and trust that what is here presented will meet their approval.

T. F. R.

1205 Washington Avenue, 1875.



# Instruments for Making Examinations.

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The Kramer Bi-valve Ear Speculum is a well-known and convenient instrument, for dilating small nasal openings, and a modification of this, by Mr. James Hinton, of London, having wider and flattened blades, is well adapted for larger ones. Although some appliance of this sort is requisite for the inspection of the nasal cavities through their anterior openings, it can never be more than a partial examination, because of the peculiar formation of the turbinated processes hiding from view their under-surfaces. The instruments for completing, or making more thorough this examination, are glass mirrors, of various sizes: One, the Pharyngeal Mirror (Fig. 2), placed under and back of the velum palati, and the others, the Anterior Nasal Mirrors, (Fig. 3) passed into the nasal cavities anteriorly, during the dilation of the opening. They are employed to illuminate the surfaces, and reflect their image, so as to ascertain their condition; the former reflector for examining the posterior and inferior portions of the several turbinated processes, the latter their borders and under surfaces.

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## TONGUE DEPRESSOR.

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A Tongue Depressor is required for both the examination and the treatment of all the diseases of the posterior nares, the pharyngo-nasal, the pharyngeal, and the laryngeal cavities, as it provides free access of light, and prevents interruptions by the tongue during the use of other instruments.

Almost any pressure on the tongue, *made by the physician*, produces a retching, a contraction of the pharynx, and an elevation of the soft palate, and renders the examination and treatment impracticable; but if the patient has the Tongue Depressor entirely under his own control, these disagreeable effects are almost entirely avoided. For while the mind is at rest, all apprehension being removed, the muscles of the fauces and velum remain quiet and passive. The patient is directed to place the instrument well on the tongue, to open the mouth wide, and to breathe freely and naturally. In this way, the chief object will

be attained, namely: the relaxed condition of all the muscles of the fauces.

This method of using the Tongue Depressor is not only more convenient for the operator, but much more pleasant for the patient; it is, in fact, *his instrument* during the examination and treatment.

For many years I have found that a Tongue Depressor with a handle and shaft twelve inches long (Fig. 1) was best adapted to the purposes in view, because it allows the hand that holds the instrument to be kept out of the operator's way. Into the head of the shaft is fastened, by a



Fig. 1.—Long-Handled Tongue Depressor (reduced one-fourth.)

milled head screw, either a long or a short tongue piece, adapted to the length of the patient's jaw. This tongue piece may be bent to any angle with the shaft, which permits the base of the tongue to be depressed as much as is desired, in any case. With this instrument the soft palate, the tonsils, the uvula, the lateral and posterior walls of the pharynx—as high as the first cervical vertebra, and as low as the upper border of the third—may be exposed to view, and frequently the upper border of the epiglottis also may be seen.

## REFLECTORS.

An experience of the inconvenience of the stationary Pharyngeal Mirror, in the examination of the posterior nares and the pharyngo-nasal cavity, led me to devise one in which I could alter the angle of reflection at will.



Fig. 2.—Hinge Pharyngeal Mirror (reduced one-half.)

There is a pivot on the back of the frame of the Mirror, (Fig. 2), on which the frame-holder is slipped: This pivot allows rotation of the reflector, so that the longer diameter may be placed in any direction desired. The frame holder is connected with a double stem, by hinge joints, to

which any desired inclination of its plane may be given by one of the stems being moved by a lever on the handle. The instrument is complete with one handle and three or more reflectors of various sizes.

The advantages of this instrument are; 1st, after the mirror has been introduced within the fauces, the whole surface may be seen, repeatedly, by reflection, without the elevation and depression of its outer extremity, which is necessary with the stationary mirror, thus avoiding one cause of agitation or disagreeable impression upon the mind of the patient, which, in many cases, especially with first examinations, is sufficient to excite muscular contraction of the fauces; 2nd, that the survey may be more rapidly made, which is a desideratum, as the period for a pendent, soft palate is often very brief; and 3d, that the mirror which is slipped on the frame-holder may be revolved to suit a wide or narrow fauces.

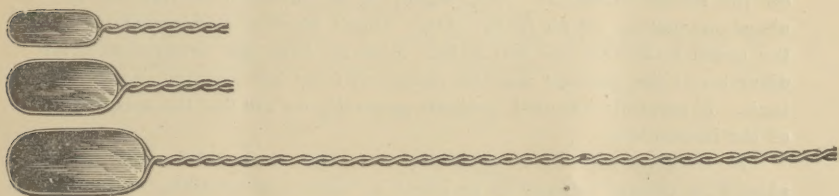


Fig. 3.—Anterior-Nasal Mirror.

The Anterior Nasal Mirrors (Fig. 3), varying in size from two to five lines in width, and from five to eight lines in length, are each enclosed by a wire placed along the edges, the extremities of which by being firmly twisted together, serve as a handle, as well as the means of framing the mirror. A coating of shellac protects the amalgam of the mirrors from abrasion. Any desired angle may be given to the reflectors by simply bending the wire. The length of instrument is about six inches. Inspection of large nasal cavities may be more thoroughly and rapidly made by the introduction of the hinge mirror.

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## RETRACTORS.

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It is sometimes necessary to raise the uvula and draw the soft palate slightly forward, in order to obtain a more extended view of the cavity above. During first examinations, the excitability of the velum palati is often so great that the usual hook-shaped retractor, even handled with the utmost care, is very disagreeable to the patient, inducing elevation, and frequently, instead of facilitating the examination, prevents, by its contact, any inspection of the posterior nares or pharyngo-nasal cavity, whatever.





Fig. 4.—Uvula Retractor (reduced one-half.)

To avoid this I have employed an Uvula Retractor (Fig. 4) of the following description: A tube six inches long and one-eighth of an inch in diameter, having at one end an enlargement three-sixteenths of an inch transversely, and cup-shaped, for the purpose of receiving the uvula. The other extremity is trumpet-shaped, and one inch in diameter, and covered by sheet India rubber.

In its use the smaller extremity of the instrument is applied gently to the uvula, whilst the air is expelled from the tube by slight pressure on the rubber extremity. This done, the uvula is drawn into the tube about one-quarter of an inch. Only slight traction is necessary to lift the uvula and draw the soft palate forward, thus the antero-posterior diameter of the passage may be increased from one-quarter to one-half inch. If carefully handled, patients generally do not feel the application of the instrument.

In Surgical cases it is necessary that the whole of the soft palate should be drawn forward to as great an extent as possible. For this, a hook-shaped Retractor is the only kind that is reliable. As the patient is obliged to learn to tolerate the application of such an instrument, any form or shape that will dilate the parts, and not injure them, is all that is required.

In the early part of the year 1867, I removed a large polypus from the superior wall of the pharyngo-nasal cavity. The greatest source of trouble, during the operation, was the difficulty encountered in retaining the soft palate sufficiently forward. As a narrow hook could not enlarge the passage to the extent desired, a wider one was employed; but, frequently, as soon as this was placed behind the relaxed velum, involuntary contraction of the pharyngeal muscles ensued, and severe pressure on its edges caused marked suffering of the patient. These circumstances led me to devise the Spreading Soft-palate Retractor (Fig. 5), which almost entirely obviates the difficulties.

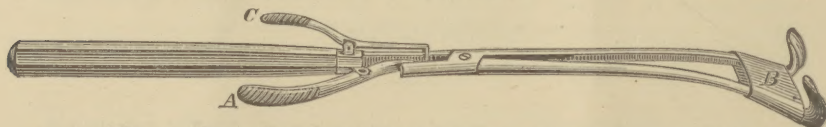


Fig. 5.—Spreading Soft Palate Retractor (reduced one-half.)

The instrument resembles an ordinary palate-hook, split longitudinally; the surface of each hook that comes in contact with the soft palate, is made convex, by binding the plates; the arms are separated by a lever (A) on the handle, and are maintained in this expanded condition by a retainer or wedge—connected with another lever (C) having a spring under it—which insinuates itself between them. The uvula is prevented from dropping into the operator's way by a small piece of thin rubber



tubing (B) slipped on the arms over the hooks, which also answers to close the hooks on raising the wedge (C). The elasticity of the arms is such as to yield sufficiently to muscular contractions, when they do occur, to prevent injury to the soft palate.

The application is easy, the operator passes the closed hooks gently behind the relaxed or pendent soft palate, elevating them sufficiently to engage the velum, then separates the limbs of the instrument by pressure on the lever first-named (A), which stretches the soft palate laterally, then traction on the handle increases the antero-posterior diameter of the passage.

By use of this instrument equal retraction of the velum palati—with both relaxation and tension at will—can be effected by the left hand, while the right is engaged in operating, and more room is secured during surgical treatment than by any other kind of retractor.

I have frequently attached a small stationary Reflector to this Retractor, which enabled me to see the parts operated on.

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## ACOU-OTOSCOPE.

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In the month of February, 1869, I was consulted in regard to an exceedingly troublesome noise in a patient's ear, occasioned by his own voice passing up the Eustachian tube. I had repeatedly observed the same phenomenon in several other patients during the previous year. By the aid of the Aural Auscultating Tube, and the peculiarity of the symptoms, I arrived at a conclusion with reference to the cause of this symptom or phenomenon, but still was fearful that I might be mistaken, because the effect of this diagnosis was to disprove the theory held by Otologists, respecting the action of the Eustachian Tube in supplying air to the middle ear. My interest being excited, I determined to more thoroughly investigate the cause of this peculiar symptom, and in doing so, to make a more careful search into the condition of the organ or organs involved, than is usually practiced.

In ordinary examinations of the Eustachian Tube and membrana tympani, the canal is auscultated at one time, and the drum head inspected at another; therefore, while viewing the latter, during inflation of the middle ear, we only see the effects of the air douche on the membrane, no note can be taken in regard to peculiarity of the sounds that is occasioned by the air in its passage through the Eustachian Tube; nor, while listening by means of the auscultating tube, to the sounds in this canal during inflation, can the effects of the air on the membrana tympani be observed; that is to say, during inspection of the ear, no auscultation can be practiced, nor during auscultation can there be any inspection. It was this impossibility of seeing and hearing at the same time, that induced me to attempt a device by which auscultation and inspection could be practiced

together. In this I was successful, and have named the instrument—as it combines two kinds of examinations—the Acou-Otoscope. (Fig. 6.)



Fig. 6—Acou-Otoscope (reduced one-third).

It consists of a truncated conical ear speculum, with its larger end closed by a well fitted piece of plain clear glass; connecting with and opening into its cavity is a metallic tube, about five inches long and one-fourth inch bore, the purpose of which is to conduct the sounds from the patient's ear to the ears of the Aurist; it also serves for a handle by which the patient may hold the instrument in proper position.

The method of using the instrument is thus: The smaller end of the conical portion is fitted into a conical ear speculum, one end of a rubber tube, about fourteen inches long, is slipped on the long metal tube, the other end is connected with a Camman's stethoscope, the trumpet extremity being removed. After placing the Acou-Otoscope in the conical ear speculum, and inserting this into the ear to be examined, the patient is directed to hold the instrument in position most favorable to the Aurist for viewing the membrana tympani, using the hand corresponding to the ear inspected. He is cautioned against any movement of his fingers holding the instrument, whereby any sounds may be produced by friction, as the slightest movement thus made will occasion sounds far louder than any that might come from his ear during examination. The Aurist now secures a reflector to his forehead, by which he illuminates the auditory canal, then places the stethoscope in his ears, gives the patient a little water to swallow, and, while inflating the middle ear, he is to look through the glass of the instrument, so that he may observe the effects of the air douche on the membrana tympani.

In this way he is enabled to hear the sounds produced by the air in its passage through the Eustachian tube (by their being conducted from the patient's ear through the ear speculum, the Acou-Otoscope, the rubber tube, and the stethoscope, to his own ears,) and note their characteristics, and to observe the movements, or other effects, of the membrana tympani at the same time.

In the year 1873 I published a paper on the subject of "The Function of the Eustachian Tube, etc.," and offered, in support of my views, the symptoms of several patients who were suffering from patency of this canal,—a condition not then recognized. I was aided by the aural auscultating tube, by different simple experiments and by this instrument, but only employed it as a means of supplying additional proof of patency of the Eustachian tube. I did not then recognize its great value. Since this time I have had occasion to treat other patients similarly affected, in which I have employed it, and find from its evidence alone, that every case of this class may be correctly diagnosed, and the degree

of patency ascertained, and its consequences placed upon a demonstrable basis, leaving no longer room for any reasonable doubt.

Indeed, I may say, that in all pathological conditions of the Eustachian tube, especially if the membrana tympani is also implicated, the Aurist will find that the evidence afforded him will be most full and satisfactory, enabling him to reach a conclusion that justifies but little if any doubt as to the completeness of his diagnosis. The reason for this is very plain and obvious, from the fact that the faculties of seeing and hearing are combined in the investigation, which secures a greater accuracy and certainty as to results, than was ever attained when only one faculty at a time could be used, since the recognition of a condition, either pathological or physiological, by one of the senses, may be confirmed by the operation of the other.

## Instruments for Making Applications.

### SPRAY PRODUCERS.

In local treatment of the Nose, Throat and Ear, affected by what is understood as chronic inflammation of their mucous membranes, the main defect of all plans has been the *want of mildness combined with thoroughness*. Especially is this true of the nasal and pharyngo nasal cavities, as they are difficult to cleanse and treat without doing injury, equal to any benefit intended.

Whatever method for cleansing and medicating the inflamed surfaces may be chosen, it should be such a one as will cause but *slight* irritation, not lasting beyond a very few minutes.

Experience has taught me that Spray Producers of various forms, that throw streams in the directions required to make *direct applications*, and of such capacity and power, that the quantity and force may be regulated to suit the severity of the case, are the best means that can be employed.\* When used to cleanse covered surfaces, they blow and wash the mucopurulent secretions away from their lodging places, in a manner that is mildly yet thoroughly accomplished; and when used for treatment, they force the medicated solution, into every irregularity, into places that have never been reached by the brush or spray, or even viewed during life. As the instrument can throw a stream in one direction only, acting upon a surface of about three-fourths of an inch in diameter, and as the avenue for application to the extensive surfaces of the nasal and the pharyngo-nasal cavities, are the narrow space behind the sensitive soft palate and the anterior nares, and to the larynx over a reclining and sensitive epi-

\*The agent employed to produce the spray is air forced from India rubber bulbs, represented in the illustration of the Catheter Nasal Douche (Fig. 11). I prefer that the bulbs should be attached close to each other, rather than separated by six inches of tubing. This proximity will prevent the reservoir bulb from becoming an encumbrance, and allow it to be more readily reached, as the hand used to compress them can be slipped from one to the other, when desirous of making a continuous spray, or one short, light, or heavy stream.



glottis, therefore a number of nebulizers whose points are so constructed, as to throw streams in the various directions that are requisite to cleanse and medicate every portion of the diseased surfaces, are indispensable. My experience has taught me, that five varieties of Spray Producers are necessary to treat the superior cavities,

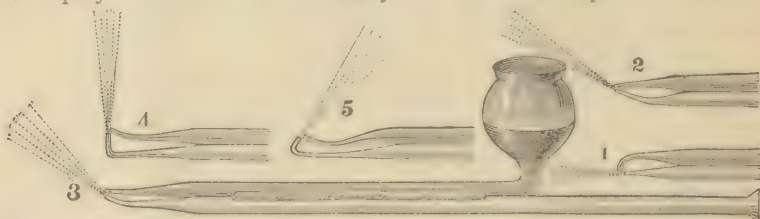


Fig. 7—Spray-producers for the pharynx, the pharyngo-nasal and nasal cavities (reduced one-half.) No. 1 throws a spray directly forward into the mouth. No. 2 into the anterior nares. No. 3, upon the posterior wall of the pharyngo-nasal cavity. No. 4, the superior wall of same. No. 5, into the posterior nares.

(Fig. 7—Nos. 1 to 5, inclusive), and three the larynx (Fig. 8—Nos. 6 to 8, inclusive)—viz: one, (No. 1) throwing a horizontal stream, acting upon the surface of that portion of the pharynx which is in view when the mouth is open and the tongue depressed, washing the anterior portion of the soft palate, the tonsils, and by elevation of the outer extremity, the posterior wall of the pharynx from the third cervical vertebra upward to the middle of the second; one, (No. 3,) throwing a stream at an elevation of forty-five degrees, directing the spray against that portion of the posterior wall covering the first and second vertebrae; one, (No. 4,) throwing its stream vertically, reaching the superior surface or arch boundary of the pharyngo-nasal cavity; one, (No. 5) reaching through the posterior nasal openings, throwing a stream upward and forward, at an angle of forty-five degrees, washing the under surfaces, borders and sides of the superior middle, and inferior turbinated processes;\* and still one other, (No. 2) intermediated in direction between the first and second named, is introduced into the anterior nares, and by elevation and depression of its outer extremity, made to wash and medicate the remaining portions of the nasal passages.

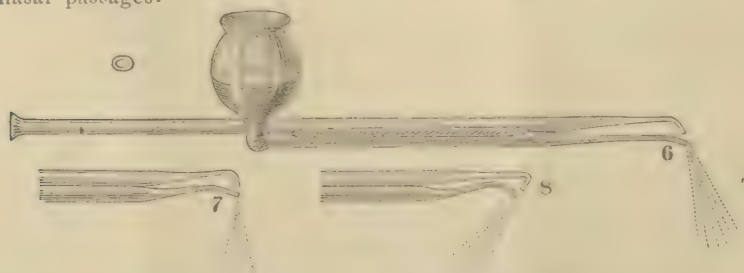


Fig. 8.—Spray Producers for the Pharynx and Larynx; (reduced one-half.)

\*The point of No. 4 and 5 should be placed a little behind the lower border of the soft palate, alternately upon the right and left side of the uvula.

For the Larynx, one, (No. 6, Fig. 8,) that throws a stream on that portion of the posterior wall of the pharynx which is in front of the third and fourth cervical vertebrae; one, (No. 7) that directs its stream into the larynx, and, accompanying slight inhalation, the trachea; and one, (No. 8) washing the base of the tongue and posterior surface of the epiglottis. Slight rotation of the instruments will be required to treat the lateral walls.

The history of this variety of Spray-producers is as follows: In the month of June, 1866, I bought from A. M. Leslie & Co., of this city, three of Maunder's glass Spray-producers—the illustration of which was then placed by Otto & Rynders, of New York, in their advertisement—one of which threw a stream horizontally, one downward, and one vertically. To each instrument was attached a small bottle to contain the medicated fluid. After using them a few times, one was accidentally broken. As I could not wait for a supply from New York, and as my patients had become very much attached to this method of making applications, I resolved to try to make my own instruments. After a few failures, I at length succeeded in making a Spray-producer fully equal to the expensive one injured, and in a few weeks afterwards, blew upon the end of the tube that had been inserted into the container, a cup or reservoir in which the medicated liquid was placed. This I found to be a great improvement on the bottle, as I had by this time learned that the fluid should be warmed before being used.



Fig. 9.—Warm Spray Producer (reduced one-third.)

Since that time I have made all the **Spray Producers** that I have used; lately, my son—a lad thirteen years old—has made them for me. For some time I thought that I was the first to put a cup or reservoir on the glass **Spray Producer**, but it will be seen from the following that Dr. J. Solis Cohen, of Philadelphia, preceded me a little over one year. He says, on page 32, in his work on “Inhalations”:

“In May, 1865, I exhibited to the Surgical Section of the American Medical Association a portable instrument in which I had turned the Bergson tubes, as modified by Winterich, upside down, and screwed a little reservoir on the large extremity of the perpendicular tube. Where glass tubes are employed the extremity of the perpendicular tube is blown out into a reservoir.”

The tubing I obtain from the glass blowers is much heavier than is ordinarily seen in drug stores, and flattened on one side—a section of which is represented by the small figures at the left of the cup, No. 6, Fig. 8. They are less bulky in this shape, than two round tubes would be when attached together. One tube is straight and seven inches in length; the other, five inches long, with a bulb or cup blown on it. I form the points on each kind of tubing, and bend them and the tubes to their proper shape, over a small gas light or alcohol lamp, and attach them by again heating and placing a small piece of prepared gutta percha between them, such as is used by Dentists.

A short experience will enable any one having a little “knack” to form and adapt the points, for either a fine or a coarse spray. They are fragile, it is true, but the loss by fracture—ordinary care being taken—is quite small compared with the numerous advantages they present. I would recommend that any one making frequent use of such sprays, should begin early to acquire the ability to make and repair them.

Cases of chronic thickening of the nasal mucous membrane in adults, and of sub-acute forms of thickening in children, affecting also the Eustachian tubes, in which the secretions are almost entirely wanting, are often met with, and especially require the effects of heat along with medicinal preparations used. To fulfill these indications, I have, after various efforts, constructed a Warm **Spray Producer** (Fig. 9) which in fact is but an addition to the Siegel-Bergson steam apparatus. It is a thick glass tube (D) four inches long, three-fourths of an inch in diameter. This is pointed at one extremity, so as to present a half inch opening; the other is closed with a rubber cork having two perforations, one for holding the stem of a small nebulizer, that is placed within the larger tube (D) or container, and the other for the reception of the steam pipe from the boiler (A). The nebulizer and the boiler are connected with the India rubber air bulbs by a double tube (B and C) of the same material. On the arm which is connected with the boiler is a faucet (C). A small lamp is placed under the boiler to generate heat. The outer end of the container (D) is slightly elevated for the more convenient insertion into either nostril.



The mode of application is as follows: A little water is placed in the boiler (A)—a small quantity of iodine, ammonia, carbolic acid, or other volatile agent, may be added—which is heated to about 120° F. The medicated fluid to be converted into spray, is placed in the container (D); over the end of the container is slipped a common rubber nipple shield, a quarter of an inch of the closed extremity cut off, to prevent the spray from escaping, except by return from the other nostril, and to protect the patient from the heat of the glass. After the introduction of the instrument into one of the nostrils, air is forced by the air-bulbs both into the nebulizer and the boiler, the effect of which is to produce a warm spray of the temperature desired; the intensity of the heat being governed by the amount of air allowed to pass into the boiler through the faucet (C). Many of my little patients prefer this instrument, both for the treatment of the nostrils, and inflation of the middle ear. They need only to close the nostril not treated, when the warm spray will inflate both middle ears, sometimes without the act of deglutition; more frequently an involuntary act of swallowing will take place, and then the spray is forced into the Eustachian tubes in greater quantities.

Experience, in reference to the temperature of air forced into the middle ear, is much in favor of the warm air over that of the cold.

This instrument has also proved very beneficial in myringitis, resulting from acute catarrh of the middle ear, and in furuncle. The heat and the anæsthetic property of the carbolic acid, have a very soothing effect. The force applied to the air bulbs for the treatment of these afflictions, should not be as great as that required for the treatment of the nasal cavities.

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## CATHETER NASAL DOUCHE.

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When the muco-purulent secretions have been hardened, adhering closely to the mucous membrane of the superior portions of the nasal and pharyngo-nasal cavities, and the spray-producers have not sufficient force to remove them, this may be accomplished to some extent by the posterior nares syringe; but, however carefully handled, it may cause, by its application behind the soft palate, occasional injuries, and the force of the injection such unpleasant sensations, that the patients refuse to submit to it. The apparatus most resorted to in such cases, is the Weber nasal douche (improperly called Thudichum's). That this mode of cleansing is beneficial, either when the disease is wholly situated low enough for the medicated stream to wash it—which is *very* seldom—or when the secretions are so abundant as to flow or extend to the inferior portion of the cavity, is not doubted; but it is needless to say it is of no benefit if it will not cause the medicated fluid to be applied to the diseased surfaces.

When the head is inclined forward (as recommended in this method), the rubber tube inserted into the nasal opening of the affected side, and the fluid allowed to flow into the cavity, it can only rise a little higher than the lower border of the posterior nasal opening of this side (indicated by the horizontal line *e*, Fig. 10); then it flows around the posterior border of the septum nasi, over that portion of the soft palate that joins the hard palate, on its way out through the other nasal passage, and this is equal



Fig 10—Antero-posterior section of the face and head; *a*, inferior turbinated process; *b*, middle turbinated process; *c*, superior turbinated process; *dd*, location of incrustations to be removed; *e*, line showing the height of the water in the nostril irrigated by the Weber douche. "Dotted line" indicates the position of the posterior border of the septum nasi, the turning point of the liquid in leaving the other nostril.

*in height to only one-half of the nasal fossa:* the half that is very rarely incrustated, or requiring treatment, as its affection is only secondary, being caused by the secretions flowing down upon it from the original seat of the disease; leaving the pharyngo-nasal cavity untouched. In the other nasal passage the floor only is washed by the escaping liquid. The elevation of the soft palate against the posterior wall of the pharynx, will not alter the turning place of the liquid, nor cause it to rise much higher in the cavity. Closure of the communication downward, is not a provision, as asserted by the advocates of this method, that will allow either a more rapid current into the cavity, or its filling, by closure of the other nostril, as either will occasion forcible, involuntary deglutition, lowering of the palate, followed by a choking sensation. Of course a continuance of this manner of application would be of short duration, certainly not long enough to be efficient. At this moment the water may be forced into the Eustachian tube, which may induce inflammation of the middle ear.

That my statements are in conformity to facts may be demonstrated by an experiment that will designate the relative positions of the surface incrustated, and the portion of the cavity that has been washed by the Weber apparatus, viz: An aqueous solution of starch ( $\mathfrak{Z}$  j ad  $\text{O}$  j) is

first passed through the nasal passage by the Weber douche, immediately following this, a weak solution of iodine and iodide of potassium is thrown by spray upon all the mucous surfaces within that cavity. The result, (which may be seen on inspection with pharyngeal mirror placed under and behind the velum palati), will be a discoloration of the surface reached by the douche, the characteristic blue of the iodine of starch. In my opinion this test is conclusive evidence of its inefficiency.

When masses of fetid matter are loosened during the use of the Weber douche, it merely shows that the secretions were so abundant, as to flow within reach of the irrigating fluid; or, it may be, that the irritation by the medicated liquid excited a greater flow of mucus, which would detach a portion of the crust, and have an effect similar to that of an irritating powder when snuffed into the nostrils. Upon careful examination of a badly affected case, after the use of this douche there will be observed in the superior portion of the passage a quantity of the inspissated secretions still remaining, *which cannot be removed by it.*

After years of observation of the inadequacy of this plan, I devised an apparatus which I have called the Catheter Nasal Douche (Fig. 11). It will throw a shower or coarse spray from the flow of the nostril upward, reaching every portion of the irregular surface of the passage, making per-

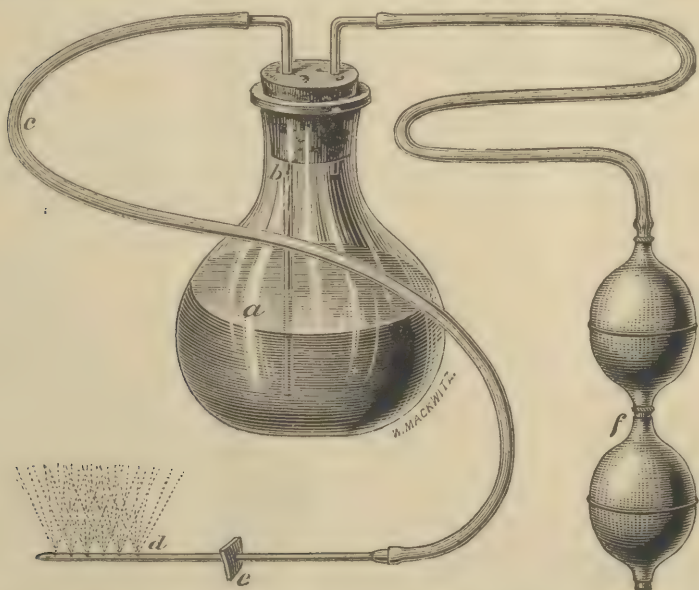


Fig. 11—Catheter Nasal Douche (reduced one-third); *a*, reservoir; *b*, metal tube for the passage of the fluid, having a small aperture in its side for the entrance of air; *c*, rubber tube; *d*, foramina for escape of coarse spray; *e*, catheter; *f*, India rubber air bulbs, used to force air in the bottle.



fectly efficient and direct local application. When warm salt water is used, the only sensation it occasions is that of tickling, which is never objected to by the patient.

The apparatus consists of the following parts: A flask-shaped bottle (*a*) of a pint or a pint and a half capacity; into its rubber stopper are inserted two metallic tubes, whose outer extremities are bent at right angles, and turned in opposite directions; one of these tubes is short, passing just through the cork, and has attached to it the India rubber air bulbs (*f*); the other (*b*) almost reaches the bottom of the vessel, and has attached to its outer extremity a hose (*c*), about twelve inches long, a part of which consists of rubber and part of glass tubing, the latter being about three inches long, inserted in about the middle of the hose. This glass tube is placed here that the operator may inspect the relative quantities of air and water passing through it. To the hose is fastened a No. 5 or No. 6 flexible catheter (*d*), at the further end of which are made five small openings on a line with its axis, three-eighths of an inch apart. The free extremity of the catheter is closed. The metal tube, whose lower extremity dips into the medicated fluid, has a small aperture (*e*) in its side, just under the rubber stopper; this is to allow air to enter during the passage of the liquid, the effect of which is to cause it to contain beads of air and fluid of equal size, the right proportion being about one-half inch of air,\* and one-half inch of liquid, so that when escaping from the openings in the catheter, (*d*) it will resemble a coarse spray.

In its application, the catheter is introduced horizontally into the affected cavity, with slight rotation on its axis; the coarse spray or spattering current of liquid and air, which passes directly upward, will wash and blow the secretions from their lodging places, in a milder and more efficient manner than a steady flow from any apparatus in use. The cleansing process may be greatly assisted by the patient closing the nostril of



Fig. 12—Nose Spout (reduced one-third.)

\*The relative size of the beads of air and water may be ascertained by suddenly arresting the current in its passage through the hose, by compressing it near the catheter, and inspecting at the glass part. If the air beads are relatively larger, the opening (*b*) in the long metallic tube is too large; if smaller, then the opening is too small. In either case, the aperture must be so made as to give about equal size of beads.

the other side, then giving a quick and forcible blow out of the one being washed, expelling the liquid and everything loose, with great force. A perforated, triangular plate of rubber, with one inch border, is slipped on the catheter (*e*) about three and one-half inches from the closed extremity, which will serve as a guide both in regard to the direction of the stream and the distance of insertion; at the same time, it will prevent the liquid from flowing on the operator's hand.

A Nose Spout, (Fig. 12) to be used by the patient, resembling an ear spout, will be useful in preventing the liquid and muco-purulent secretions from falling on the lips, and from soiling the clothing while blowing the nose.

## THE AURAL DOUCHE.

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The same apparatus that is used for cleansing the nose (the Catheter Nasal Douche) may, with a slight alteration and two additions, be converted into an Aural Douche.

The changes to be made consist, first, in the removal of the catheter (*e* Fig. 11,) from the hose (*c*), and in its place is inserted one of Lucae's soft metal ear nozzels, which is so made that the liquid escaping from the ear is prevented from running down on the patient; and, second, in slipping one inch of soft rubber tubing on the longer metal tube, so as to close the aperture (*b*) in its side, thus preventing the entrance of air, which was desirable in the Catheter Nasal Douche, but not in this.

This apparatus is superior to the common aural syringe, both in respect to its efficacy and convenience for either the removal of inspissated cerumen, or the treatment of otorrhœa, because it throws a continuous stream.

In the treatment of simple otorrhœa, as that of nasal catarrh, success depends mainly in the cleansing being *thoroughly* yet *mildly* performed. We must keep in mind that it is not alone the auditory canal that is to be washed clean, but principally the tympanic cavity; also, that the upper half of this cavity is above the superior wall of the auditory canal, therefore filling this passage with an irrigating fluid, only half fills the tympanum, (provided the head remains in the erect position) its upper half being occupied by air; nor can this air be displaced by forced injections of liquid, if limited by the patient's endurance.

As we know that the surface of that portion occupied by the air, is not being washed, therefore we must place the tympanic cavity in a position similar to that which we would a bottle of the same shape, and a like position, that is, cause its mouth or outlet to be placed over the air bubble, then its escape readily takes place.

To attain this result with my patient, I cause his head to describe a circle in the following manner: Commencing with head in the erect position, the stream is allowed to run a few seconds, that he may become accustomed to the sensation it produces, he is then directed to incline his head forward until the forehead assumes the horizontal position; the motion is slowly continued to the left side—provided the right ear is the one treated—until the stream falls perpendicularly into the ear\*. The rolling motion is continued backward until the head is thrown back far enough, for the forehead to again assume the horizontal position: then it is brought forward to the position first named. This rotating motion is continued until the cleansing is completed. It is some times quite beneficial to inflate the middle ear during this process, also to perform the act of deglutition with the nostrils closed; this, because it rarifies the air in the pharyngo-nasal cavity, causes the irrigating liquid to enter and wash the Eustachian tube. It is advisable that inflation of the middle ear—the head being inclined to the affected side—should follow the irrigation, to drive out all the remaining fluid.

In this way, every portion of the tympanic cavity is cleansed completely and speedily. The speed will undoubtedly be modified by the size of the aperture through the membrana tympani, the smaller the opening, the longer the time required to properly cleanse the tympanum.

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## THE TUBULAR LARYNGEAL FORCEPS.

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The obstacles encountered in the extraction of laryngeal tumors, are numerous, and to a certain extent prevent their removal.

One of the difficulties in the way is, that the greatest length of the vertical portion of the laryngeal forceps which can pass into the pharynx without touching any of its parts, is not long enough to reach the vocal cords, in a large majority of cases, without at the same time depressing the base of the tongue from one-fourth to three-fourths of an inch.

The patient may learn to tolerate this pressure on the tongue, and to overcome the natural tendency of the fauces to close spasmodically when touched, but it requires from one to three weeks' practice to do so. Even after this culture, the force exerted by the tongue in its upward action—a result of pressure upon it—is not always the same, because of the mental apprehension so natural and even unavoidable with patients about to undergo such an operation; therefore, the power required to overcome the resistance, varies to such an extent, as to occasion frequent failures.

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\*While the head is in this position, less force should be given to the current, to avoid symptoms of vertigo.



The length of the vertical portion of the forceps is necessarily limited by the boundary of the space through which it must pass to enter the larynx; that is, during its passage, no part of it should touch the base of the tongue, the epiglottis or the posterior wall of the pharynx, since mere contact of the instrument, in a throat not educated to such usage, would produce instant depression of the epiglottis, if not closure of the fauces, and consequently that attempt to reach the vocal cords would not be successful.

To overcome this obstacle, I have devised an instrument (The Tubular Laryngeal Forceps, Fig. 13), which can be passed readily into the larynx, and then lengthened to the extent required to reach the vocal cords in the longest neck.

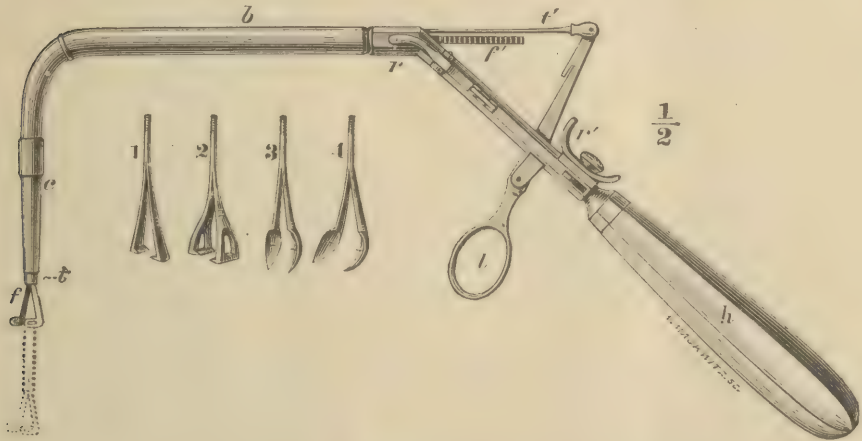


Fig. 13—Tubular Laryngeal Forceps (reduced one-half.)

It consists of a tube (*b*, *c*,) seven inches long, bent at a right angle, forming a horizontal and a vertical portion, the latter (*c*) being two and a half inches long. To the horizontal portion of the tube (*b*) is attached a handle (*h*) six inches long, at an angle of  $45^{\circ}$ . On the handle is a lever (*l*) two and a half inches long; this is connected with a rod (*l'*) which passes through the entire length of the tubular portion (*b*, *c*,) and is attached, at its lower extremity, to a smaller tube (*t*) within the larger one, by which the vertical portion (*c*) is lengthened, and the forceps closed at will. Underneath this rod, is another rod (*f'*), whose upper extremity is serrated, which also passes through the tubular portion, and terminates in a socket; into this socket is screwed the forceps (*f*). There is a slide on the handle, which is moved by a hook-shaped projection (*r'*). This is so connected to two levers which act as retainers (*r*), that pressure on the hook-shaped projection (*r'*) causes the retainer to grasp the serrated rod (*f'*) and retain it in the position desired, and thus prevent the further descent of the forceps. The outer side of each limb

of the forceps, is serrated, the purpose of which is to cause the descending tube, that closes them, to retain its hold, or position, even when the pressure on the lever is withdrawn. Forceps (1, 2, 3, 4 and *f*) of various shapes and sizes may be used.

The method of using the instrument is as follows: After the vertical portion (*c*) has been introduced into the larynx, it is lengthened by the lever (*l*) pushing both rods (*l'* and *f'*) into the horizontal portion (*b, c*), which causes both the smaller tube (*t*) and the forceps (*f*) to descend (see dotted lines). As soon as the length desired has been attained, then the serrated rod (*f'*) is arrested by pressure being made on the hook-shaped projection (*r'*) with the thumb, causing the retainers to grasp it firmly, retaining it and the forceps in the position required. The forceps are then closed by continuing the pressure on the lever (*l*) causing the rod which is attached to it (*l'*) to push the smaller tube (*t*) over the base of the forceps

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From the result of observations made, during eleven years experience in the treatment of chronic catarrhal inflammation of the Nose, Throat and Ears, on the phenomena presented by the disease itself, and on the indications of what is proper to be done for its removal or amelioration, I have come to the following conclusions:

(1.) That this affection cannot be cured in a short time, nor by harsh means.

(2.) That all patients who ultimately regain a healthy condition of these parts, do so by the membrane *growing* to the normal state, under conditions which favor and assist the natural processes of repair.

(3.) That a large number of cases, mostly the young, will recover without other treatment than that of maintaining the surfaces free from the extraneous products of inflammation.

(4.) That the surfaces covered by unhealthy secretions must be cleansed before a proper treatment can be effective, unless the coating is so slight that the application itself will both cleanse and medicate at the same time. But if it be necessary to continue the application of the solution to the parts coated with secretions longer than is proper to treat the parts not thus covered, then it will be found that those surfaces that did not require this lengthy application, will be injured by the excess of treatment necessary for the other parts, and thus produce an increase of the inflammatory action in the whole cavity.

(5.) That there are three indications for the cessation of all applications: 1st—*Pain*—This should not under any circumstances be produced to such a degree of severity as to continue beyond a few seconds, even should it occur during the attempt to remove accumulated secretions by the mildest measures. 2d—*When the parts are cleansed*—As soon as the secretions are removed, the washing process should be at once discontinued. The statement of the patient that its effects are pleasant,

## TABLE.

Ages.	1866 and 1867		1868.		1869.		1870		1871.		1872.		1873.		1874.		No. Patients who came to be treated for diseases of the <i>Nose</i> , but were also affected in the Ears and Throat.						No. Patients who came to be treated for diseases of the <i>Ears</i> , but were also affected in the Nose and Throat.						No. Patients who came to be treated for diseases of the <i>Throat</i> , but were also affected in the Nose and Ears.						Total.		Tobacco used by Males.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Nose.		Ears.		Throat		Ears.		Nose.		Throat		Throat.		Nose.		Ears.		Males.	Females.	Used.	Not used
																	Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem	Male	Fem				
4 mo. to 1 year.	1	..	1	..	..	1	..	1	1	1	2	2	1	2	2	3	4	...	...	3	4	4	2	4	2	...	...	1	2	1	2	...	...	8	8	...	...	
1 year to 3 years	..	2	2	..	..	1	1	3	1	1	2	1	4	2	3	3	6	3	1	2	5	3	5	7	5	7	...	...	2	3	2	3	1	1	13	13	...	...
3 years " 5 "	..	3	1	..	1	..	1	3	..	1	3	..	3	1	8	6	6	7	2	4	6	6	7	5	7	5	3	4	4	2	2	1	17	14	...	...		
5 " " 8 "	1	1	..	..	..	4	3	4	..	1	4	..	3	3	13	6	13	8	12	8	5	6	6	5	6	5	3	3	5	6	5	6	3	4	24	19	...	...
8 " " 10 "	3	2	..	2	2	2	2	4	4	3	4	5	3	4	6	7	14	12	12	10	11	10	7	11	7	11	4	6	3	6	3	6	3	4	24	29	...	...
10 " " 15 "	8	5	2	8	3	10	4	9	2	14	7	12	8	7	5	11	22	43	20	38	15	33	11	16	11	16	6	8	6	17	6	17	4	9	39	76	15	24
15 " " 20 "	2	11	1	10	1	6	9	14	9	15	12	15	11	17	14	20	36	61	31	52	28	42	13	25	13	25	8	12	10	22	10	22	7	13	59	108	29	30
20 " " 30 "	25	22	15	10	17	13	20	14	14	23	25	38	13	51	27	58	73	132	68	111	55	108	45	45	45	45	27	30	38	52	38	52	21	31	156	229	112	44
30 " " 40 "	16	8	13	10	20	7	33	20	30	19	45	23	38	13	41	26	121	42	118	40	101	35	55	56	55	56	45	37	60	28	60	28	28	14	236	126	205	31
40 " " 50 "	10	1	7	..	14	2	9	5	6	2	9	1	13	2	19	6	30	2	27	2	27	2	35	9	35	9	30	7	22	8	22	8	20	6	87	19	73	14
50 " " 60 "	3	1	4	..	1	..	5	..	6	..	2	1	1	...	8	2	3	...	3	...	3	...	10	2	10	2	8	2	17	2	17	2	17	2	30	4	27	3
60 " " 70 "	1	..	..	..	2	..	..	1	1	..	2	..	1	1	3	...	1	...	1	...	1	...	5	1	5	1	5	1	4	1	4	1	10	2	8	2		
70 " " 80 "	..	..	1	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	...	2	...	2	...	1	...	1	...	1	...	3	...	2	1
80 " " 90 "	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	1	...	1	...	1	...	...	...	...	...	...	1	...	...	1	
	70	56	47	40	61	46	88	78	75	80	116	98	101	102	149	147	328	314	295	267	260	249	206	184	206	184	142	110	173	149	173	149	111	86	707	647	471	150
	126	87			107		166		155		214		203		296		642		562		509		390		390		252		322		322		197		1354		621	





should not induce a longer continuance of the irrigation, as it has a softening or weakening effect on the whole mucous membrane. If we keep in mind that these applications are foreign to the normal condition of these surfaces, we will readily perceive that the medicated fluid will prove an injury to them, if continued beyond the point of cleansing. And, 3d—*When every part has received the direct application of the spray.* It is not at all difficult to over do the matter by continuing the treatment. The application of the spray from each instrument, made by from three to five complete compressions of the rubber bulb, will be quite sufficient.

(6.) That the catarrhal affections of the middle ear and throat, origi-  
tine nasal and pharyngo-nasal cavities. Nasal and pharyngo-nasal  
catarrh may exist without the ear or throat becoming involved, but a  
catarrhal condition of either of the latter organs is *always* preceded by  
a catarrhal condition of the former, therefore, in the treatment of tym-  
panitis and laryngitis, attention should, at the same time, be given to the  
primary seat of the affection. (See Table.)

(7.) That many patients will require treatments, after their first  
long course, at each successive fall and spring, until the parts regain  
their tonicly. This time will vary from three to five years. Others  
may require more or less attention at every change of the season during  
life. For instance, taking a medium case; treatments should be given  
daily for about five days; then every other day, or three times a week,  
for about four or five weeks; then twice a week for the same length of  
time; and then once a week for four or six weeks. At the next change of  
the season, either fall or spring, treatment should be given every other day,  
for from four to six times, commencing with the first cold in the head.  
Generally it is not required, in this latitude, to give as many treatments  
at the spring change of the season as at the fall. If the patient is im-  
proving, he will require a less number of treatments at each succeeding  
season. If the fall and spring treatments are not given with regularity,  
the disease, being reinforced by colds, will become, in a few seasons as  
severe as if it had not been treated, and should this neglect of stated  
applications continue, the complaint will gradually become still more  
aggravated, and less under the control of remedies. Between the sea-  
sons, the patient may feel as free from catarrhal symptoms as if he had  
never been afflicted by them, and may flatter himself that he has recov-  
ered so completely as to be out of danger of a recurrence; but if the  
disease has existed for five years or more, he will find that such is not  
the case, since the mucous membrane will not have had time to *grow*  
*well*, and that it will yet require several years for it to do so, during which  
time he will have to be very careful not to be exposed to influences that  
may cause a return.

(8.) That the proportion of males to females whose catarrhal affec-  
tions drives them to seek relief, varies in the case of females, according  
to the amount of exposure, or to insufficient or improper clothing; and  
in the case of males, according to age and the effects of tobacco, in addi-  
tion to "colds," as seen in the following table:

Up to the age of ten years, both sexes are about equally protected,

and consequently equally affected, the proportion being 86 males to 83 females. From the 10th to the 15th year, the boys, although more exposed than formerly, are beginning to be more warmly clad, wearing boots, overcoats, woollen neck-wrappers, etc., while the girls, being nearly as much exposed as they, are yet even less protected than formerly, especially during the season of parties and social gatherings in winter, because they think "it does not look well to be bundled up," thus making the proportion nearly 1 to 2 (33 males to 76 females). If we subtract the cases whose affections are greatly aggravated and made intolerable by the use of tobacco, this proportion will be changed to 24 males to 76 females, or 1 to 3. From the ages of 15 to 30 years, the same influences are having the same effects, and we have then 215 males to 337 females. Although these females were not protected by warmer clothing than their younger sisters, yet the relative proportion between the sexes is in their favor, the cause of this is found in the fact that relatively more males are using tobacco than at former ages. Subtract half the number of the consumers of this weed—as no doubt exists that this agent was the cause of that proportion becoming patients—then it will stand as 71 males to 337 females, or 3 to 14. From the ages of 30 to 40 years, there is a remarkable change in the proportion between the sexes, it being 236 males to 126 females. Instead of the females being in the great majority—nearly 2 to 1,—they are now in as great a minority, nearly 1 to 2. At this age it is presumed that females who are not patients have changed their mode of living, and are less exposed to sudden changes of temperature, or have learned by experience to protect themselves by the use of warmer clothing; while the males of even age were gradually being more injured by the long continuance of the use of tobacco, which is in accordance with the admission of nearly every one of them. The same remarks apply to all after this age.

Patients of both sexes should wear, in all seasons, the fine knit drawers and vest that is usually found in furnishing stores. The material of which they are made, consists of about one-third wool and two thirds cotton; this proportion of wool and cotton is more pleasant to the surface of the body, as well as much better than all woollen goods, because cotton absorbs the perspiration more rapidly than wool, while this proportion of wool will prevent the garment from adhering to the surface of the body, at such times as it is covered with moisture, and thus avoid the cold sensation that cotton goods have to the perspiring body.

When the weather begins to become cold in the fall, then a heavier suit should be put on *over* the suit already worn. As soon as the thermometer ranges in the neighborhood of 15° F., female patients should put on a *third* suit, as heavy as the second. And if at any time they are to be exposed for several hours during the coldest winter months, a *fourth* suit should be donned. These supplementary suits should be made of pure wool.

Many lady patients, who at first were very certain that they could not carry this amount of clothing, were astonished to find that the four suits were only one half of the weight of a fashionable walking dress, and that the first three suits were less in weight than that of their flannel skirts which they had been accustomed to wear.

(9.) That patients should be impressed with the importance of taking unusual care to avoid all exciting or predisposing causes, especially during fall and spring, as the disease is more liable to return at these seasons. That they may be better enabled to carry this advice into effect, the following rules might be given:

- 1.—Do not remain in a place where a current of cold air can strike but a limited part of the body, especially the head.

- 2.—Be exposed as short a period of time as possible to night air;



when out at this time, wrap additional clothing around the neck and chest, and keep the mouth closed.

3.—Do not go to any place where there is an impure atmosphere of a high temperature.

4.—Do not allow the feet to become cold.

5.—Always breathe through the nostrils, day and night.

6.—Wear fine knit cotton-wool drawers and vest next to the body, thin in warm weather, and a sufficient number of additional woolen suits in cold weather to keep the body warm.

7.—Do not use tobacco nor remain in a room where it is being smoked.

8.—Do not use spiritous drinks unless prescribed by a physician.

9.—Should a cold recur, regard it as of the greatest importance to get rid of it at once; while it is slowly "wearing off" it may do irreparable damage to the mucous membrane, therefore drive it away quickly. The effect of habitually allowing colds to run their course, makes it possible for the next one to remain a longer time; the continuance of this neglect, for a few years, will result in a return of the disease to its original severity.

## REMEDIES.

The following are a few of the remedies that may with benefit be applied to these cavities, by means of these instruments:

**ACIDUM CARBOLICUM**.—During the last five years of my practice, this agent has maintained its place at the head of the list of remedies. I use it in a solution of glycerine and water, and in combination with other remedies, principally with the astringents. The strength of the solution that is thrown into the posterior nares with the Nos. 4 and 5 Spray Producers is usually about  $1\frac{1}{2}$  grains to the ounce. The sensation produced by the spray should be slight, each application should give evident relief.

**ACIDUM LACTICUM**.—This agent has the reputation of dissolving the membranous exudation in croup cases. I use it in combination with carbolic acid, as in the following:

$\mathcal{R}$  Acidi Lactici f  $\mathfrak{Z}$  ij ss.

Glycerinæ f  $\mathfrak{Z}$  ij.

Acidi carbolici m xx.

Aquæ ferv. f  $\mathfrak{Z}$  vj.

M. This to be thrown while warm into the pharyngo-nasal cavity, the pharynx and the larynx by the Spray Producers Nos. 1, 4, 5, 6, 7 and 8.

**ACIDUM NITRICUM**.—This, in a very dilute form, is a good stimulant, and is especially useful for washing ulcers previous to application of caustics.

$\mathcal{R}$  Acidi Nitrici Dil. f  $\mathfrak{Z}$  ss.

Aquæ f  $\mathfrak{Z}$  viij.

Mix well, then add Glycerinæ f  $\mathfrak{Z}$  ji.

M. Use, while warm, with such Spray Producer as is required to direct the stream to the locations affected.

**ACONITUM NAPELLUS**.—The tincture of this root—half of a drachm added to eight ounces of the carbolic acid solution—is a very valuable remedy in pharyngitis, accompanied with great pain cases that apparently have a local hyperæsthesia. As soon as the pain is controlled it should be used sparingly.

**AMMONIÆ HYDROCHLORAS**.—For many cases in which there exists a varicose condition of the blood vessels, the muriate of ammonia is very beneficial, ( $\mathfrak{Z}$ j ad aquæ  $\mathfrak{Z}$ vij).

**BROMO-CHLORALUM**—As the solution of common salt will not deodorize an ozæna, I have had resort to Bromo-Chloralum. It will disinfect temporarily the most offensive case, but care is required to prevent the throat from being injured by it. From two drachms to an ounce may be added to a pint of warm water, the patient applying it by means of the Catheter Nasal Douche, (Fig. 11) from one to three times daily, or as frequently as it is found necessary to maintain cleanliness and purity of breath from the nostrils.

**CALENDULA OFFICINALIS**.—I have used this in the place of the *Pinus Canadensis* in the treatment of sore throat in scarlet fever, and measles; and find that the surfaces do not become dry so readily after the application of the Pine. One ounce is added to the Carbolic Acid solution.

**CHLORIDE OF SODIUM**—I have not found anything that is a better cleanser of the mucous surfaces than a solution of common salt in warm water, about one drachm of the former to one pint of the latter. When the secretions are so abundant as to be visible, it is well to wash them away by throwing this solution on the mucous surfaces by means of the Spray Producers, or, if necessary, by the Catheter Nasal Douche, previous to the application of the spray of the stimulating remedies. The amount employed should be governed by the quantity required to free the surfaces from the accumulated secretions, using *no more* than is necessary to accomplish this.

**"COSMOLINE."**—This is a product of crude petroleum. Its effect on the mucous membrane is very soothing. I throw it into the anterior nares by the No. 2 Spray Producer. It guards against the exhalation of the watery portion of the mucus, thus preventing inspissation of the purulent secretions.

**CUPRI SULPHAS**—This agent seems to be superior to Nitrate of Silver in promoting healthy granulations in many cases of phagedenic ulceration. Previous to its being applied, the ulcer and surrounding parts should be well cleansed by the spray of muriate of ammonia solution; after the application of the Sol. Cupri Sulphatis, it will be well to again spray the parts with the Sol. Acidi Carbolicus comp, as this will allay the pain occasioned by the copper.

The strength of the solution required for such cases will depend much on the cause of the ulceration, and on the history of the rapidity of the destructive process. If the cause is specific, and the ulceration rapid, a strong solution should be applied, about the strength of the following:

℞ Cupri Sulphatis grs. cxx.

Aquæ f ℥ j.

M.

I prefer to apply this by means of a small mop made of cotton wrapped around a small flexible whale-bone probe.

**PINUS CANADENSIS**.—I have been using this agent constantly since 1872, and consider it the best astringent in use, especially in cases where the secretions are abundant and the mucous membrane flabby. I generally combine it with the carbolic acid solution, as in the following formulæ:

℞ Acidi carbolicus m xii.

Glycerinæ f ℥ j ss.

Pinus canadensis ℥ i.

Aquæ ferv. f ℥ vj ss.

M. Spray, while warm, with

Nos 4 and 5, into pharyngo-nasal and nasal cavities.

℞ Acidi Carbolicus m xx.

Glycerinæ f ℥ ij.

Pinus canadensis ℥ jss.

Aquæ ferv. f ℥ vij.

M. Spray, while warm, with

Nos. 1, 3, 7 and 8, into the pharynx and larynx.





